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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,307	10/17/2006	James H. Babler	27013/39425B	9467

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EXAMINER

LAO, MARIALOUISA

ART UNIT	PAPER NUMBER
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1621

MAIL DATE	DELIVERY MODE
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06/07/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/564,307	Applicant(s) BABLER, JAMES H.	
	Examiner M. Louisa Lao	Art Unit 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 45-64 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 45-64 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>4/24/06</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. **Claim 45 is rejected** under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In line 1 of claim 45, Applicant recites *a conjugated diene*, while reciting in line 2 of claim 45, *mixtures thereof*. The singular preposition in line 1 is not in sync with the plurality recited in line 2.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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6. **Claims 45-64 are rejected** under 35 U.S.C. 103(a) as being unpatentable over Babler (US6278016, US`016 *in IDS*) and Clark (US1172516, US`516).

Applicant Claims

7. The instant claims are drawn to a method for preparing an ester from the reaction of a conjugated diene compound with an alkanoic acid, with a $pK_a < 4$, in the presence of a non-basic organic co-solvent and a base having the formula $(R_2CO_2)M$, as described therein; where said acid, base and co-solvent are pre-heated to a temperature in excess of 100°C, prior to the dropwise addition of the conjugated diene, without a catalyst, in a pressurized vessel.

*Determination of the Scope and Content of the Prior Art
(MPEP §2141.01)*

8. US`016 teaches the method of conversion of isoprene to its corresponding alcohols via an ester intermediate. In column 3 lines 30-67 bridging to column 4 lines 1-7, US`016 states that methods for converting isoprene to certain prenyl esters are known, and illustratively, isoprene is added to a mixture of alkanoic acids with an inorganic acid catalyst *or* alternatively, without a catalyst (as illustrated in the schematic chemical reaction in column 3) in a pressurized vessel at a temperature of approximately 40°C to 100°C to form the corresponding prenyl ester. The latter is then hydrolyzed to the corresponding alcohol.

9. US`516, on the other hand, teaches the esterification of myrcene with its reaction with a stoichiometric excess of carboxylic acids to form acetates, primarily geranyl and neryl. In page 2 column 1 lines 14-43, US`516 teaches that the nature of the carboxylic acid, the ratio of acid to myrcene and in the second column lines 79-82, US`516 teaches that no more than the specified amount, should an acid that has $pK_a > 3$ should be present in the reaction system. US`516 also states that a solvent may be present and the reaction mixture is heated to temperature is 50°C to

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250°C, and kept a temperature 10°C to 20°C below the reflux temperature of the reaction mixture and carried out under *super-atmospheric pressure*. Periodic or continuous analytical testing is used to monitor the progress of the reaction.

***Ascertainment of the Difference
Between Scope of the Prior Art and the Claims
(MPEP §2141.012)***

10. The instant claims and the cited prior art references are drawn to the process of making esters from the reaction of a conjugated diene with alkanolic acids. Both US'016 and US'516 are specific with their recitations of the conjugated diene compounds, isoprene and myrcene, respectively. Both cited prior art references are silent on pre-heating the solution comprising at least one alkanolic acid prior to the reaction with the conjugated diene.

***Finding of Prima Facie Obviousness Rational and Motivation
(MPEP §2142-2143)***

11. At the time of the invention, one of ordinary skill in the art looking to improve on the method of esterification of either US'016 or US'516, would have found it *prima facie* obvious to start with the teachings of the cited prior art references and couple said teachings with a pre-heating step, to make applicants' process using their methodology, the reactor conditions, reaction specifics and parameters, thereto. The combination of the teachings of the cited prior art suggests that specific features of their invention may be combined with other features in accordance with the invention, and alternatively embodiments will be recognized by those skilled in the art and are intended to be included within the scope of the claims. It is not only thermodynamically efficacious that the free energy (ΔG) of the reactants, in this case, alkanolic acid and diene compound, is lower than the free energy (ΔG) of the products for the reaction to proceed at a faster rate; but equally important to render the reactants to be more soluble with

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each other with the addition of a pre-heating step. Therefore, it would have been obvious to modify the combined cited prior art processes, such as by adding a pre-heating step, since these are within the purview of artisan through routine experimentation, to develop a more economical esterification process with a reasonable expectation of success.


12. The recitation of alternate temperature ranges are optimization steps that are within the normal undertaking of one of ordinary skill in the art at the time of the invention and would not require any inordinate degree of experimentation.

13. Optimizing such processes is *prima facie* obvious because an ordinary artisan would be motivated to use known processes from the art to make the process more efficient or explore economical advantages over the other. Merely modifying the process conditions is not a patentable modification absent a showing of criticality. In re Aller, 220 F.2d 454, 105 U.S.P.Q. 233 (C.C.P.A. 1955).

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M.Louisa Lao whose telephone number is 571-272-9930. The examiner can normally be reached on Mondays to Fridays from 8:30am to 5:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter, can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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MLouisa Lao
Examiner
Art Unit 1621


for JOHANN RICHTER
SUPERVISORY PATENT EXAMINER
TC1600 GAU 1621